WILDLIFE HABITAT INCENTIVES PROGRAM

WHIP

2007

Implementation Plan

And

Instructions

Natural Resources Conservation Service
Columbia, South Carolina

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Application and Evaluation
Instructions

PROCEDURE

1. After reviewing the Implementation Plan, print and/or copy only the forms needed to complete the application and evaluation.
2. Complete a Wildlife Habitat Evaluation for all land uses and fields in the contract area for the existing condition.
3. Determine the practices needed based on the Wildlife Habitat Evaluation.
4. Complete the Wildlife Habitat Evaluation for all land uses and fields for the planned condition.
5. Complete the WHIP Application and Evaluation Worksheets (NRCS-LTP-15, SC Revised 11/04) in entirety, including the required signatures.
6. When preparing WHIP Application and Evaluation Worksheets (NRCS-LTP-15, SC Revised 11/04), only practices listed as approved are authorized for cost share.
7. After you are notified of the contracts funded, forward the completed worksheet to the program specialist.

NOTE: *Incomplete worksheets will be returned to the field office for completion prior to being placed on the state-ranking list for funding.*

GUIDANCE

Use the **Wildlife Habitat Evaluation Worksheets** for planning purposes and to assist in the location of practices. National Quality Criteria for wildlife habitat has been set at .5 or 50% of the potential habitat value of the land, existing or planned, regardless of the land use (wildlife as a secondary land use). If wildlife is the primary land use, a minimum of .75 or 75% of the potential wildlife habitat potential must be met. Complete an evaluation for ranking purposes which will assist the planner in identifying the limiting factors on the offered acres. The application of conservation practices must address the limiting Factors identified and move the Wildlife Habitat Evaluation Index score to above the minimum 0.75 potential wildlife habitat quality criteria index.

Waterfowl impoundments are not authorized for cost-share.

Cost share for land clearing is authorized for the establishment of permanent fire breaks (12 - 15 ft. wide) and the creation of **forest openings for enhancement of wildlife habitat which is limited to 2acres or less.** See Forest Openings for Wildlife Habitat (460, 645, 647).

Landowners may create forest openings in pine stands as needed to enhance the diversity of habitat for wildlife. Cost share is authorized for the management of rotational disking, planting of native grasses/legume or forbs and prescribed burning. **Cost-shared openings must be separated by at least 600 feet and have a 25ft field border around**

75% of the field if they will be planted to annuals to optimize utilization based on the Wildlife Habitat Evaluation. The field border may be permanent or properly managed early successional vegetation. Remember that forest openings for wildlife are 0.5 to 2.0 acres in size, and they may be planted to an annual seed crop, the year that they are disked (every 3 years), and then left fallow for two years. If landowners have existing openings that are less than the minimum acreage requirement of 0.5 ac, clearing is authorized to enlarge them to meet our requirements.

If the proposed application includes prescribed burning (338) of pine stands, then one of two conditions MUST apply: (1) The stand must currently have a basal area of 60 – 80 square feet per acre or (2) the pine stand must be thinned to a BA of 60 – 80 square feet per acre PRIOR to the application of the prescribed burn.

Prescribed burning (338): A detailed prescribed burning plan must be prepared by *SCFC* or other *Certified Prescribe Fire Manager* for each contract with a prescribed burning planned. A copy of the burn plan must be in the contract folder prior to submitting for payment.

Hedgerows (422): The purpose of hedgerows is to subdivide larger fields into smaller fields (open land). Shrub lespedeza strips may be used in the hedgerow as well as other woody vegetation, trees and shrubs. Shrub lespedeza strips are typically 15 feet wide, whereas a hedgerow is 25 to 50 feet wide. Shrub lespedeza strips in the woods do not qualify as hedgerows nor do bicolor plots along the edge of field, in the field borders. Shrub lespedeza strips are cost sharable if they are a part of a legitimate hedgerow.

Tree/Shrub Establishment (612) Tree and shrub plantings are cost sharable for hedgerow establishment, longleaf pine establishment or solid hardwood plantings up to 2 acres in a location, only. The hardwoods shall be planted on a 10 X 10 spacing resulting in 435 trees per acre. **Remember to include appropriate Forest Site Prep, to reduce competition, and firebreaks to protect these areas from fire.**

Firebreaks (394): Permanent firebreaks 12-15 feet wide are cost-shared for establishment through disking or land clearing. They are generally perimeter firebreaks and 1 or 2 internal breaks permanently located which can be disked at time of burning. Water bars should be planned and implemented if they are needed on sites that are susceptible to erosion. Temporary breaks with fire plows are included in the prescribed burning cost-share, and should not be a separate item.

Land Clearing (460): Land clearing is authorized for the creation of Forest openings. These openings must be at a minimum of 600 ft apart and be at least 0.5 acre and 2.0 acres or less in size. If there are existing openings, but are less that 0.5 ac. they may be enlarged to meet our requirements.

Forest Site Preparation (490): This practice may include herbicide treatment to control undesirable herbaceous weeds, grasses, or woody vegetation, in conjunction with tree planting.

Forest Site Preparation (490) –Herbaceous Weed Control: This may be used in the implementation of early successional habitat management (rotational disking) to allow for adequate germination and growth of desirable plants, grasses and forbs that will benefit wildlife. **Only one application should be planned as this should be enough to control undesirable grasses such as common Bermuda grass and fescue. Journey should be used if fescue is a problem.**

Upland Wildlife Habitat Management (645) – Herbicides - This component should be used to set back succession in clear cuts. It may be feasible on clear cuts that are 40 acres or less in size or in 50-75 ft. strips in any clear cut that will be replanted to pines for production at 500 or less trees per acre. **Herbicide application will not be allowed more frequently than every 3 years (If Sprayed in spring of 2007 then the next spraying would be in the spring of 2010.) No trees shall be planted in a field or portion of a field that is going to be sprayed.**

Upland Wildlife Habitat Management (645) - Legumes - Some additional planting may be needed or desired to improve overall quality of the wildlife habitat. The **following legumes may be cost-shared for the planting of forest openings: Florida beggar lice, Birdsfoot Trefoil, Partridge pea, Ladino Clover, Crown Vetch, Subterranean Clover, and Shrub lespedeza. Herbicides are included in the cost share rate.**

Field Border (386) - Will be maintained in early successional vegetation by use of rotational disking or native warm season grasses. Approved native legumes or forbs may be planted in a mix with native grasses to add more diversity. **The following plant species are approved: Partridge pea, Illinois bundle flower, Black-eyed Susan, Maximillian Sunflower, Florida Beggar lice, and Birds foot Trefoil. (Herbicides are included in the cost share rate.) If the field border is managed for natives species use (490 Forest Site Prep –Herbaceous Weed Control as needed.)**

Early Successional Wildlife Habitat (647) - The purpose of this practice is to improve diversity in the plant communities in a given area. This is achieved through cultivation. Refer to Job sheets for examples on achieving this objective. Use Forest Site Prep (490) – Herbaceous Weed Control to help facilitate this practice as needed to control undesirable plants such as common bermuda and fescue. If fallow fields or openings are to be managed for early successional vegetation or native grasses/ species, and are larger than 2 acres, the field may be divided with a hedgerow, 25 – 50 feet wide.

Forest Stand Improvement (666): This practice may include mechanized removal of under story or mid story woody vegetation, such as with a KG blade, roller chopper, or gyro-track.

Remember: When reporting Upland Wildlife Habitat Management (645), any field that ranks out on the Wildlife Habitat Evaluation with a score >0.5, 645 may be reported for the entire field ranked, not just the field border or hedgerow. The entire field benefits from the management.

If any additional questions or further clarification is needed, then please contact the State Resource Staff.

INTRODUCTION

The Wildlife Habitat Incentives Program (WHIP) was established by the 1996 Farm Bill for the purpose of making technical and financial assistance available to landowners to develop, enhance, and restore upland wildlife, wetland wildlife, threatened and endangered species, fish and other types of wildlife habitat. South Carolina's Department of Natural Resources has identified bobwhite quail and other species associated with grassland, and early successional/shrub habitat as being a "Priority Conservation Concern" in the state. The Natural Resources Conservation Service and the State Technical Committee followed in identifying these species and habitat to also be of primary concern, in order to target technical and financial assistance to landowners in South Carolina. Because of the dependence of quail and other edge species on very specific types of early successional habitat, current land use practices (both forestry and farming) eliminate suitable nesting, brood rearing, escape, and winter cover in most instances.

STATE OBJECTIVES

1. Restore early successional habitat, and riparian areas.
2. Restore historical rice field and marshland habitat for wintering waterfowl and shorebird habitat.
3. Restore Longleaf Pine ecosystem, including wiregrass.
4. Restore and enhance trout stream habitat in the Upstate of South Carolina.
5. Eliminate invasive species in wetland areas of coastal Georgetown County

STATE WILDLIFE PRIORITIES

The following priorities have been identified as needs throughout the state, and extending across state lines throughout the southeast region. Bobwhite quail populations have declined drastically in over three-fourths of the states within their geographical distribution since the 1960's. The decline has been steeper in the southeastern United States than in the mid-western or northern regions. South Carolina has been especially hard hit by the quail decline as populations have plummeted by about fifty percent since the 1980's alone.

PARTNERSHIP INVOLVEMENT

Existing partnerships were used to deliver a public information and education program to inform landowners and land users of the ecological and economic importance of wildlife habitat management. Cooperative roles by these partners were defined as delivering on-site technical assistance to evaluate habitat conditions and providing sound ecologically based recommendations, as identified by the priorities.

POTENTIAL PARTNERSHIPS ROLE

Natural Resources Conservation Service Information/Education/Technical/Financial
U. S. Fish and Wildlife Service Information/Education/Technical/Financial
Farm Services Agency Administrative/Information
S.C. Department of Natural Resources Information/Education/Technical
S.C. State University Cooperative Extension Service Information/Education
Clemson University Cooperative Extension Service Information/Education
Soil and Water Conservation Districts Information/Education
National Wild Turkey Federation Information/Education
Quail Unlimited Information/Education
Ducks Unlimited Information/Education/Technical
S. C. Waterfowl Association Information/Education
National Audubon Society Information/Education
S. C. Forestry Commission Information/Education/Technical
The Nature Conservancy Information/Education
S.C. Wildlife Federation Information/Education
U.S. Forest Service Information/Education
S.C. Department of Agriculture Information/Education

PROGRAM DELIVERY

There are about 1600 Forest Stewardship plans existing with unfunded practices that target wildlife habitat, fish habitat, and riparian areas. The existing unfunded practices represent significant financial assistance needs, which are consistent with the WHIP objectives and priorities. There are numerous existing conservation plans with wildlife enhancement practices that are awaiting opportunities for financial assistance to be installed.

- *Information and education delivery:* Publicize WHIP program by local newspapers, radio spot announcements, organization newsletters, SC Department of Agriculture, SC Wildlife Magazine, SCDNR brochure on all Farm Bill programs, and public meetings.

Delivery of wildlife technical expertise to field offices:

- *Technical assistance to landowners:*

NRCS - 39 field offices, 5 wildlife biologists, 7 RC&D offices.
FWS - 2 wildlife biologist
DNR - 23 wildlife biologists
SCFC - 10 foresters
DU - 1 wildlife biologist
Clemson University – 2 biologists

APPROVED PRACTICES FOR COST SHARE

Required Practices (At least one of the following must be planned):
645 Upland Wildlife Habitat Management
644 Wetland Wildlife Habitat Management
657 Wetland Development or Restoration
395 Stream Habitat Improvement and Management
647 Early Successional Habitat Management

Associated Practices:
560 Access Road
342 Critical Area Planting (native grasses/legumes only)
356 Dike
386 Field Borders (early successional vegetation or planted native grasses/legumes only)
394 Firebreaks
490 Forest Site Preparation
666 Forest Stand Improvement
422 Hedgerow Planting (Shrubs and Mast producing hardwoods)
460 Land Clearing (permanent firebreaks and forest openings 2 acres. or less only)
338 Prescribed Burning
391 Riparian Forest Buffer
612 Tree/Shrub Establishment (Longleaf Pines, and (Hardwoods up to 2 acres in plots)
512 Pasture/Hayland Planting (Native Warm Season Grasses only)
382 Fence (livestock exclusion)

FUNDING NEEDS

Technical Assistance funds are used to participate in training, site evaluations, and plan development consistent with WHIP objectives. Technical assistance funds contributed by partnership consisted of in-kind assistance through participating in education programs, training sessions, public information distribution, and on-site technical assistance in preparing WHIP plans.

Financial Assistance funds are used in conjunction with partnership and participant funds to implement the approved practices as detailed in the WHIP plans.

RANKING PROCESS

The ranking process is based on the Wildlife Habitat Evaluation. Applications will be ranked on the net effect of the plan according to the wildlife habitat evaluation. Additional points are awarded for minimum amounts of habitat development as indicated on the LTP-15, as revised 11/04.

QUALITY ASSURANCE

The NRCS district conservationist will complete a status review of each contract before the end of the fiscal year, noting progress in applying the conservation plan or WHDP, need for revision, condition of practice installed, and need for technical assistance.

1. Complete a status review each fiscal year until all required practices are installed. Reviews will be conducted with the contract participant, if possible.
2. Status reviews may be conducted at any time of year.
3. Expiring contracts and must be reviewed at least 90 days before expiration and a new Wildlife Habitat Evaluation must be completed to document the effect of the plan.
4. The district conservationist has the option of monitoring activities as appropriate in conjunction with the status review.

The State Conservationist will conduct quality assurance reviews of the conservation plan or WHDP according to the national NRCS policy.

MEASURING PROGRAM SUCCESS

Information Collection: The NRCS will collect the following information to evaluate the effectiveness of the WHIP in restoring wildlife habitat. The attached wildlife habitat evaluation will be completed accordingly.

1. Measure practices applied under the WHIP through established reporting methods; and
2. Complete wildlife habitat evaluation for baseline and applied conditions as contracts expire.

Monitoring: Baseline wildlife habitat assessments will be completed at time of WHDP development. Follow-up assessments will be conducted the year all essential practices are installed, and the year of contract expiration. The following information will be collected.

1. Maintenance of previously applied practices.
2. Comparison of planned and actual conditions.
3. Evaluate the improvement of the change in wildlife habitat as compared to the baseline conditions.
4. The State Conservationist will submit pertinent information to the National Office at a frequency determined by the Program Manager at the National Office.
5. Digital photographs will be taken in conjunction with monitoring activities.

SPECIAL WHIP PROJECTS

On going special WHIP projects in South Carolina include South Carolina Partners Project, Partners for Trout (Foothills Resource Conservation and Development), Clemson Pee Dee REC Center, Indian Creek Bobwhite Quail Focus Area Project, and the Georgetown Invasive Species.

South Carolina Partners is a cooperative project on the coast addressing wintering waterfowl habitat in coastal marshes by replacing rice trunk water control devises. These rice trunks allow landowners to properly management previous diked marshes and wetlands for wintering waterfowl. It's a joint project with the U.S. Fish and Wildlife Service and Ducks Unlimited. Cost rate is 50% for the trunks and installation.

Partners for Trout is a cooperative project with the Foothills RC&D Council in the Upstate of South Carolina. The participating partners in this project with the RC&D Council are S. C. Department of Natural Resources, U. S. Fish and Wildlife Service, and Trout Unlimited. The purpose of the project is trout stream restoration and enhancement. The goal is to protect existing native trout stream habitat and restore marginal stream habitat and their associated riparian areas. The number one problem identified was thermal pollution. Phase one was to identify existing reservoirs contributing to thermal pollution of the streams and retrofit them with deep water release structures. Phase two is to identify unstable streams, which contribute to silt loading, and areas needing riparian buffer restoration.

Clemson University Pee Dee R&D Center is a cooperative project with Clemson University, S.C. Department of Natural Resources, and Ducks Unlimited. Its goal is to provide a demonstration of incorporating wildlife habitat practices into on-going farming operations. Habitat management response will be documented and economic analysis will be completed for installation and management of the practices.

Indian Creek Bobwhite Quail Focus Area Project. This is a cooperative project between the South Carolina Department of Natural Resources, the U. S. Forest Service, Quail Unlimited, National Wild Turkey Federation and private landowners in and around the Sumter National Forest located in the Broad River area of Newberry County. The focus area comprises about 10,000 acres in the Sumter National Forest and private in-holdings and tract adjacent to national forest land. The goal is to develop and demonstrate integrated management techniques with timber, cropland, and livestock producers that meet forest and farm needs and quail habitat requirements. Practices include prescribed burning, firebreaks, selective thinning, early successional habitat management, native warm season grasses and control of non-native sod forming grasses, such as fescue and bermudagrass. Quail habitat and quail response will be monitored to determine the effectiveness of the practices in a forested piedmont landscape.

Georgetown Invasive Species. This is a cooperative project with SCDNR, USFWS, Nature Conservancy, NFWF PTI, Clemson University Extension Service, and the Historic Ricefields Association. The goals are to identify the extent of Phragmites infestation, increase public awareness of the adverse impacts, document effectiveness of various control methods, and implement a cost share program for Phragmites control on private lands.

WILDLIFE HABITAT EVALUATION

BACKGROUND:

Natural Resources Conservation Service policy for assistance on private lands since its inception has required that conservation practice installation be accomplished with consideration for wildlife and wildlife habitat.

Application of conservation practices is generally considered to be beneficial for wildlife. Practices such as field borders, filter strips, grassed waterways, proper grazing management, and conservation tillage generally increase food, water, or cover and improve diversity for most wildlife species.

Practices such as brush management, drainage, timber stand improvement and pasture planting can reduce needed food and cover when applied without wildlife consideration. The effect of conservation practice installation on wildlife largely depends on practice selection, design, and plant species used.

It is not the responsibility of the Natural Resources Conservation Service to determine the extent to which landowners may or should consider wildlife needs in their operation. Neither does the NRCS determine which particular wildlife species should be managed. These decisions are made by the landowner based on economics, legal constraints, local conditions, and landowner objectives.

NRCS personnel have a responsibility and obligation to determine and explain to the decision maker what affect a planned system of conservation practices will have on wildlife resources of the particular land unit. Decision makers must be provided with this information in order to make intelligent and informed decisions about their property. The NRCS must have this information to assess the impact of practice installation and determine if service policy requiring consideration of wildlife is being properly followed. In the past, conservation practices were often designed and installed with little thought or study given to their effects on wildlife, unless the landowner indicated a specific wildlife interest.

Adoption of the total resource management policy (SWAPA) in conservation planning provides that emphasis be directed to plants, air, and animals in addition to soil and water. It requires that quality criteria be established for each of the five resources. Resource management systems consisting of various conservation practices are measured

against these quality criteria to determine if acceptable levels of conservation are being met. **National quality criteria for wildlife habitat have been set at 0.5 or 5O% of potential to meet the resource management system requirement, existing or planned, regardless of the land use. For a wildlife land RMS, which would include all WHIP applications, a score of .75 or 75% is required.**

In order to measure the degree to which any conservation practice meets the quality criteria, a method of evaluation is required. A subjective evaluation based on the planner's knowledge is the simplest form.

Wildlife Habitat Evaluation Index Guides provide the NRCS planner with a relatively simple and objective means of determining the value of wildlife habitat on any conservation planning unit. The guides can be used on land where wildlife is a primary objective or on land (such as cropland) where wildlife is a secondary objective. They can be used to evaluate habitat on different land uses including cropland, pastureland and forestland. Planning unit boundaries for wildlife may coincide with those delineated for cropland or forestland or a wildlife planning unit may be delineated that includes 2 or more land uses or land types.

The Guides are based on the following assumptions:

1. All land and water provides habitat for wildlife.
2. The quality of habitat is variable depending on the quality, quantity and interspersion of food, cover, water and space.
3. Habitat elements can be measured and compared to optimum conditions.
4. Wildlife populations are proportional to the quality and quantity of habitat available. A 400 acre planning unit may have potential to provide more diverse habitat and thus a greater variety of wildlife than does a 40 acre unit. Likewise, a 1,000 acre unit is more apt to have more potential than does a 400 acre unit. Wildlife use of an area is dependent on the variety of habitats it supports and the area's size.

These guides can be used to determine if a conservation planning unit meets the minimum quality criteria for wildlife as directed in Section III (B.) of the electronic Field Office Technical Guide (eFOTG). (See Section III - Resource Management Systems (RMS) - Animals in the eFOTG). Conservation practices and management measures can be identified to meet the minimum RMS standard or to meet the higher habitat quality objectives of the landowner. These guides are not intended to be used to evaluate the potential for introducing wildlife species not presently found on the planning unit.

The Guides have been developed to consider the needs of a variety of species using a particular land use/cover type, a goal commonly referred to as the management for species richness. They were not developed to evaluate the habitat quality for individual species. The guides may not reflect complete habitat needs or home range requirements for any particular wildlife species. They are intended to evaluate habitat diversity and richness of habitat types in the planning unit. A planning unit that exhibits high habitat

diversity is likely to have equally diverse fauna. The cropland habitat guide, for instance, evaluates habitat components for a variety of wildlife species (game and non-game) commonly inhabiting cropland, not just quail. When a landowner is interested in improving or managing habitat for a particular species, a species-specific habitat model should be used.

INTRODUCTION: The following evaluation is designed for use by employees who provide assistance in farm planning and who have limited training and knowledge in wildlife management. It is intended to assist decision makers in understanding the effects of various agricultural practices on wildlife and to provide documentation of the effects of Resource Management System implementation on wildlife resources.

This habitat evaluation is simplified to limit data input and the time required to complete it. It cannot be used to make detailed management recommendations required for intensive management. If the primary objective for a field or planning unit is wildlife, or it is to be intensively managed, a species based wildlife habitat appraisal procedure should be used, and the NRCS Biologist, Grassland/Forestry Specialist or South Carolina Department of Natural Resources biologist contacted.

PROCEDURE:

(1) Identify all crop, forest, old field, pasture, and wetland areas on the tract or farm. Fields should include borders around them such as woody fence rows that divide crop fields. Hayland should be included with pasture. If a particular type of land use does not seem to fit any of the types listed, contact the state biologist or grassland/forestry specialist.

(2) If the tract has only one field in a habitat type, or all fields within a habitat type are similar, only one field needs to be evaluated. If the tract has fields that vary in habitat quality within a habitat type, all fields should be inventoried and a weighted average score computed. If there are significant differences in the same field, the field may be divided and more than one evaluation done. For example, if one forest field had a pine plantation on part and an old mixed pine hardwood stand on the remainder, the two areas should be evaluated separately. If more than one of these variations occurs on the farm, use the weighted average score for the land use.

(3) Complete the worksheet inventories form (see attachments) for the appropriate field(s) and compute the score for each habitat type. This evaluation will provide information on the quality of habitat for the EXISTING CONDITION. Observing what features receive a low score will help the planner determine what habitat limiting factors occur within the planning unit and what conservation practices could be applied to improve the habitat.

(4) Repeat the evaluation for each of the Resource Management Systems being considered and determine the effects of each of the PLANNED alternatives on the wildlife resource.

(5) Complete the summary sheet to determine if the selected alternative meets the quality criteria for a Resource Management System and is acceptable to the decision maker. Adjusting the conservation practices or selecting additional practices that improve wildlife habitat can then be presented as an alternative conservation plan to the land owner.

Quality Criteria: In order to meet the FOTG Quality Criteria for wildlife habitat, the Habitat Type Index for each land use must have an index greater than 0.75, when wildlife is the primary land use. In general, a habitat index below 0.25 indicates poor habitat, between 0.25 and 0.5 is fair habitat, 0.5 to 0.75 is good and above 0.75 would be excellent habitat.

HABITAT TYPE INDEX (HTI) WORKSHEET FOR CROPLAND HABITAT

Participant _____ Tract No. _____
Date _____ Field No. _____
Observer _____ Acres _____
Note: This form may be used for all fields that are planned and managed alike.

CROPLAND HABITAT INDEX	POINTS	EXIST	PLAN
Crop Residue Management		_____	_____
(>75% acreage)			
Continuous no-till (long term)	15		
No-till farming, 3 out of 5 years	12		
No fall tillage only	8		
Conventional and fall tillage	1		
***Add 2 bonus points,** if cover crops are no-till drilled with 60% residue left on the surface**.**			
Crop Species		_____	_____
(>50% acreage & years)			
Corn, soybeans, sorghum, millets, and/or small grains	10		
All else	1		
Distance to forest (>10 ac.) or woody cover (>25 ft. wide) connecting to forest (>10 acres).		_____	_____
>75% of field within 330 ft.	15		
50 – 75% of field within 330 ft.	10		
25 – 50% of field within 330 ft.	5		
<25% of field within 330 ft	1		
Distance to native herbaceous strips (>25 ft. wide) within field, such as filter strips, waterways, diversions.		_____	_____
>75% of field within 330 ft.	10		
50 – 75 % of field within 330 ft.	7		
25 – 50 % of field within 330 ft.	4		
<25% of field within 330 ft	1		
Percent of Field Perimeter With a Field Border			
For each 10% of field perimeter with a width of:			
>25 ft. native herbaceous vegetation.	**Add 5 points/10%**.		_____
> 10 ft. native herbaceous vegetation.	**Add 3 points/10%.**		_____
>10 ft. mixture of introduced, and native herbaceous vegetation,	**Add 1 point/10%.**		_____

(A) Total Cropland Habitat Points (100 maximum) (B) Cropland Habitat Index (Total points/100)

HABITAT TYPE INDEX (HTI)
WORKSHEET
FOR
OLD FIELD HABITAT
(2 acres or more)

Participant _____ Tract No._____
Date _____ Field No. _____
Observer _____ Acres _____

Note: This form may be used for all fields that are planned and managed alike.

OLD FIELD HABITAT INDEX	**POINTS**	**EXIST**	**PLAN**
Species Composition		_____	_____
Many species of grass, legumes, forbs (>4)	10		
Stand dominated by a few species (2-4)	5		
Stand dominated by a single species (>75%)	1		
Manipulation (Burning, disking)		_____	_____
3 year rotation	25		
2 year rotation	15		
Mowing (2-3 year rotation)	10		
Annual or > 3 years rotation	1		
Distance to woody cover (>25 ft. wide) connecting to forest at least 10 acres in size.		_____	_____
>75% of field within 330 ft.	15		
50 – 75 % of field within 330 ft.	10		
25 – 50 % of field within 330 ft.	5		
<25% of field within 330 ft	1		
Percent of Field in early successional herbaceous vegetation (1 to 3 yrs. Old)			
For each 10% of field: add 5 points. (**Max. 50 points**)			_____
(A) Total Old Field Habitat Points (100 maximum)		_____	_____
(B) Old Field Habitat Index (Total points/100)		_____	_____

HABITAT TYPE INDEX (HTI) WORKSHEET FOR PASTURELAND/HAYLAND HABITAT

Participant _____ Tract No. _____
Date _____ Field No. _____
Observer _____ Acres _____

Note: This form may be used for all fields that are planned and managed alike.

PASTURELAND HABITAT INDEX	POINTS	EXIST	PLAN
Composition (>50% acreage)		_____	_____
Native warm season mixture (>2) with forbs	25		
Single native grass-legume mixture	9		
Introduced and native grass (>50%) mix	8		
Single legume	7		
Single native warm season grass seeded Or managed at forage rates.	6		
Introduced grass with clover	5		
Bermudagrass with small grain	4		
Bahiagrass	3		
Fescue or bermudagrass	1		
Prescribed Grazing Plan (528A) or Forage Management (511)		_____	_____
With native grass or legume in mix	10		
Without native grass or legume in mix	3		
Corridor management			
Distance to ungrazed woody cover (>25 ft. wide) connecting to forest at least 10 acres in size.			
>75% of field within 330 ft.	25		
50 – 75 % of field within 330 ft.	15		
25 – 50 % of field within 330 ft.	10		
<25% of field within 330 ft	1		
Distance to ungrazed native herbaceous or NWSG areas (>25 ft. wide) Such as field border or odd corners, etc.			
>75% of field within 330 ft.	25		
50 – 75 % of field within 330 ft.	15		
25 – 50 % of field within 330 ft.	10		
<25% of field within 330 ft	1		
Fence rows, cross fencing (>50%)		_____	_____
with ungrazed woody cover (>10 ft. wide)	15		
with grazed woody cover (>10 ft. wide)	5		
(A) Total Pastureland/hayland Habitat Points (100 maximum)		_____	_____
(B) Pastureland/hayland Habitat Index (Total points/100)		_____	_____

HABITAT TYPE INDEX (HTI) WORKSHEET FOR PINE FOREST HABITAT (Predominantly Pine)

Participant _____ Tract No. _____
Date _____ Field No. _____
Observer _____ Acres _____

Note: This form may be used for all pine forests that are planned and managed alike.

PINE FOREST HABITAT INDEX	POINTS	EXIST	PLAN
Mature Pine Stand Density, Basal Area		_____	_____
<60 square ft/ac	25		
60-80 square ft/ac	10		
>80 square ft/ac	1		
OR if no over story: Site (Clear-cut area or pastureland conversions) Pine, other than longleaf, regeneration			
<300 trees per acre	25		
300-500 trees per acre	10		
>500 trees per acre, <50 trees per acre	1		
OR if the site is within longleaf pine range:			
Longleaf Pine Restoration (300-500 trees per acre)			
Ex: 435 trees per acre (10 x 10 spacing) maximum			
302 trees per acre (12 x 12 spacing) minimum			
Must contain a prescribed burning plan	25		
Must be Historical Longleaf Pine site			
OR Early Successional Habitat Management (Herbicides)	25		
Prescribed Burning		_____	_____
2-3 year frequency	30		
Every year	10		
>3 year frequency	1		
Distance to native herbaceous cover (> 40 ' wide,>1/2 acre in size)		_____	_____
>75% of stand within 330 ft.	25		
50 – 75 % of field within 330 ft.	15		
25 – 50 % of field within 330 ft.	10		
<25% of stand within 330 ft	1		
Composition, >5% of stand (Max. 20 points)		_____	_____
Mast producing oaks (>10" DBH) present or seedlings planted	10		
Soft mast producers present or planted such as Persimmon, blackberry, sumac, elderberry, black cherry	10		
(A) Total Pine Forest Habitat Points (100 maximum)		_____	_____
(B) Pine Forest Habitat Index (Total points/100)		_____	_____

HABITAT TYPE INDEX (HTI)
WORKSHEET
FOR
HARDWOOD FOREST HABITAT
(Predominantly Hardwood)

Participant _____ Tract No. _____
Date _____ Field No. _____
Observer _____ Acres _____

Note: This form may be used for all hardwood forests that are planned and managed alike.

EXISTING CONDITION (CIRCLE APPROPRIATE SCORE VALUE)				
TREE SIZE		**NUMBER OF HARDWOOD SPECIES**		
TREE CLASS	**SIZE**	**1**	**2 TO 5**	**> 5**
Seedlings	< 3 ‘ tall	1 point	10 points	15 points
Saplings	> 3 ‘ tall, < 3” DBH	1 point	15 points	20 points
Poles	3 – 10 “ DBH	2 points	20 points	25 points
Saw timber	> 10 “ DBH	10 points	25 points	30 points
No. of cavity trees or dead snags (>10”) *present*, regardless of number of species		2 points	5 points	10 points

PLANNED CONDITION (CIRCLE APPROPRIATE SCORE VALUE)				
TREE SIZE		**NUMBER OF HARDWOOD SPECIES**		
TREE CLASS	**SIZE**	**1**	**2 TO 5**	**> 5**
Seedlings	< 3 ‘ tall	1 point	10 points	15 points
Saplings	> 3 ‘ tall, < 3” DBH	1 point	15 points	20 points
Poles	3 – 10 “ DBH	2 points	20 points	25 points
Saw timber	> 10 “ DBH	10 points	25 points	30 points
No. of cavity trees or dead snags (>10”) *planned* regardless of number of species		2 points	5 points	10 points

HARDWOOD FOREST HABITAT INDEX	**POINTS**	**EXIST**	**PLAN**
(A) Total Hardwood Forest Habitat Points (100 maximum)		_____	_____
(B) Hardwood Forest Habitat Index (Total points/100)		_____	_____

HABITAT TYPE INDEX (HTI)
WORKSHEET
FOR
RIPARIAN HABITAT

Participant _____ Tract No. _____
Date _____ Field No. _____
Observer _____ Acres _____

Note: This form may be used for riparian areas adjacent to streams, ponds, and/or wetlands.

RIPARIAN HABITAT INDEX	**POINTS**	**EXIST**	**PLAN**
Species Composition (>50 % of the area)		_____	_____
Mixed hardwood	25		
Mixed Pine-Hardwood	20		
Native shrubs and/or herbaceous vegetation	15		
Pine trees	1		
Width of Riparian Area (>50 % of the area)		_____	_____
>100 feet	25		
51-99 feet	20		
35-50 feet	15		
15-49 feet	10		
<15 feet	1		
Grazed or ungrazed (>50 % of the area)		_____	_____
Ungrazed	25		
Grazed	5		
Tree canopy cover		_____	_____
. >75 percent canopy cover	25		
50-74 percent canopy cover	20		
25-49 percent canopy cover	15		
<25 percent canopy cover	1		
(A) Total Riparian Habitat Index Points (100 maximum)		_____	_____
(B) Riparian Habitat Index (Total points/100)		_____	_____

WILDLIFE HABITAT EVALUATION SUMMARY CALCULATION SHEET
EXISTING CONDITION

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

WILDLIFE HABITAT EVALUATION SUMMARY CALCULATION SHEET
PLANNED CONDITION

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

HABITAT TYPE	FIELD NO.	HABITAT INDEX		ACRES		WEIGHTED INDEX	HABITAT TYPE INDEX
_________	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
	_____	______	X	______	=	________	
				TOTAL ______			________

Total Wt. Index / Total acres = ________

HABITAT TYPE INDEX (HTI)
SUMMARY

The tract or farm habitat index is calculated by taking the sum of the weighted habitat indexes divided by the total acres in the planning area.

EXISTING CONDITION

HABITAT TYPE	HABITAT INDEX		ACRES		WEIGHTED INDEX	FARM/TRACT INDEX
Cropland	_____	X	_____	=	_____	
Old Field Habitat	_____	X	_____	=	_____	
Pastureland/Hayland	_____	X	_____	=	_____	
Pine Forest	_____	X	_____	=	_____	
Hardwood Forest	_____	X	_____	=	_____	
Riparian Habitat	_____	X	_____	=	_____	
	TOTAL		_____		_____	

Total Wt. Index / Total acres = _____

PLANNED CONDITION

HABITAT TYPE	HABITAT INDEX		ACRES		WEIGHTED INDEX	FARM/TRACT INDEX
Cropland	_____	X	_____	=	_____	
Old Field Habitat	_____	X	_____	=	_____	
Pastureland/Hayland	_____	X	_____	=	_____	
Pine Forest	_____	X	_____	=	_____	
Hardwood Forest	_____	X	_____	=	_____	
Riparian Habitat	_____	X	_____	=	_____	
	TOTAL		_____		_____	

Total Wt. Index / Total acres = _____

**Total Weighted Index of Planned Condition must be 0.75 or greater to meet RMS Quality Criteria.*

****For use with cost-share programs that require a NET Increase in HTI****

HABITAT TYPE INDEX (HTI)
NET EFFECT OF PLAN

(Planned Farm/Tract Index - Existing Farm/Tract Index) = Net Effect of Plan

_____ - _____ = _____

STREAM ASSESSMENT PROCEDURE

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name: _____ Date: _____

County: _____ Prepared by: _____

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bank full elevations. Bank full flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bank full flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bank full elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

Natural channel; no structures, dikes. No evidence of down cutting or excessive lateral cutting	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levees are set back to provide access to an adequate floodplain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess aggradations; braided channel. Dikes or levees restrict floodplain.	Channel is actively down cutting or widening, >50% of the reach with riprap or channelization. Dikes or levees prevent access to the floodplain.
10	7	3	1

SCORE: _____

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank occurs every 1.5 or 2.0 years. No dams, no water withdrawals, no dikes or other structures limiting the stream's access to the floodplain. Channel is not incised.	Flooding occurs only once every 3-5 years; limited channel incision. Or withdrawals, although present, do not affect available habitat for biota.	Flooding occurs only once every 6-10 years; channel deeply incised. Or withdrawals significantly affect available low flow habitat for biota.	No flooding; channel deeply incised or structures prevent access to floodplain or dam operations prevent flood flows. Or withdrawals have caused severe loss of low flow habitat. Or flooding occurs on a 1 year rain event or less.
10	7	3	1

SCORE: _____

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation extends more than 50 feet on each side.	Natural vegetation extends at least 35 feet on each side.	Natural vegetation extends at least 15 feet on each side.	Natural vegetation extends < 15 feet on each side.
10	8	5	1

SCORE: _____

4. Bank Stability

Banks are stable; banks are low and at elevation of active floodplain; 33% or more of eroding banks are on outside bends and are protected by roots extending into the base flow elevation.	Moderately stable; banks are low; <33% of eroding banks are on outside bends and are protected by roots extending into the base flow.	Moderately unstable; banks are high and flooding occurs 1 year out of 5 or less frequently. Outside banks are actively eroding with some slope failures.	Unstable; banks are high and eroding in some straight reaches and inside banks; numerous slope failures.
10	7	3	1

SCORE: _____

5. Water Appearance

Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: _____

6. Nutrient Enrichment

Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: _____

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: _____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: _____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

SCORE: _____

10. Canopy Cover (Use coldwater or warm water below, not both)
Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface shaded and upstream 2-3 miles generally shaded.	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly shaded.	20-50% shaded.	<20% shaded in reach.
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: _____

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: _____

AVERAGE SCORE (TOTAL SCORE / 11): _____

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:
12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating
< 6.0 Poor
6.1 – 7.4 Fair
7.5 – 8.9 Good
> 9.0 Excellent

Beck's Index
For
Stream Macro-invertebrates

(Tally number of individuals in each Taxa)

Group 1 Taxa
- Stonefly _____
- Caddis fly _____
- Water penny _____
- Riffle beetle _____
- Gilled snail _____
- Mayfly _____
- Dobsonfly (hellgrammite) _____

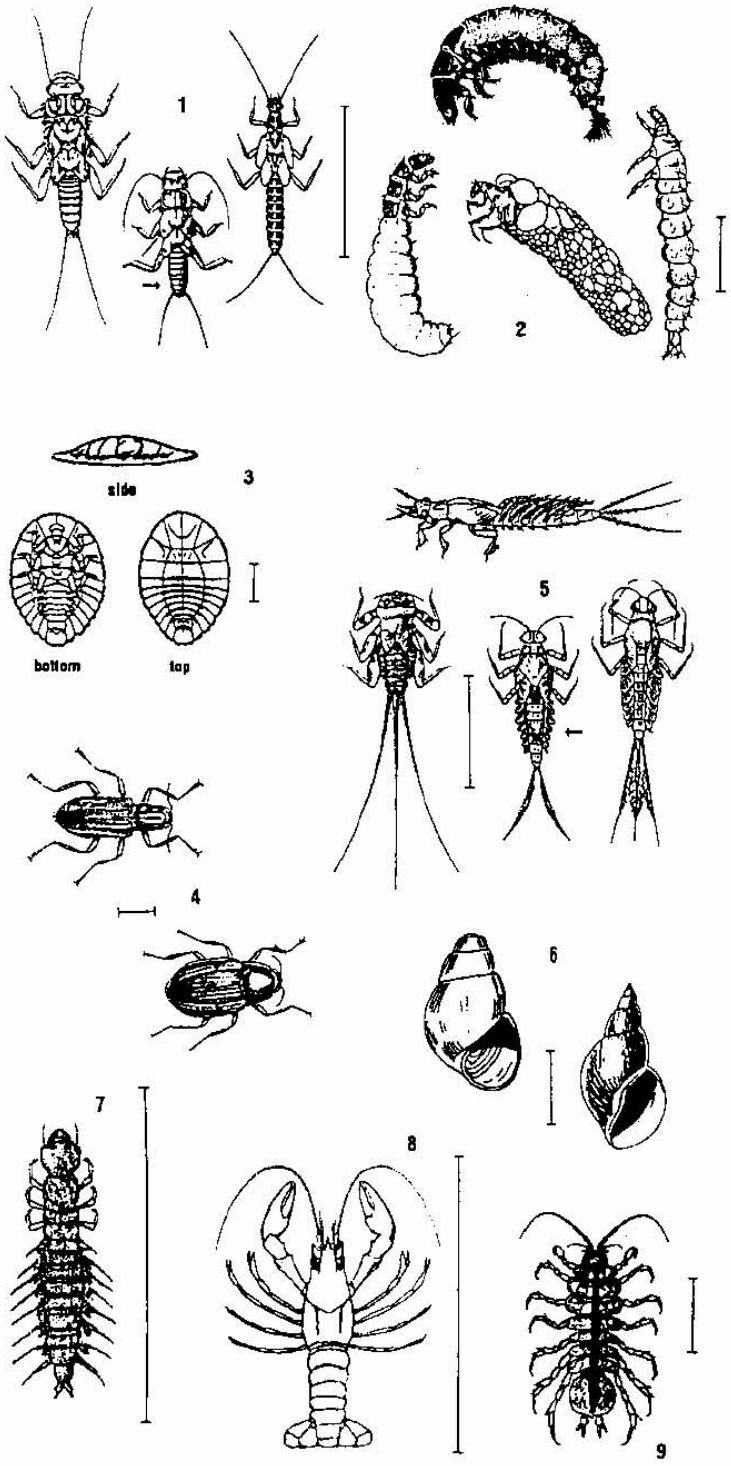
Group 2 Taxa
- Crayfish _____
- Sow bug _____
- Scud _____
- Alderfly larvae _____
- Fish fly larvae _____
- Damselfly _____
- Water snipe fly larvae _____
- Crane fly _____
- Beetle larvae _____
- Dragonfly _____
- Clam _____

Group 3 Taxa
- Aquatic worm _____
- Midge fly larvae _____
- Black fly larvae _____
- Leech _____
- Pouch snail _____
- Other snail's _____

Beck's Index:
(Use total number of different Taxa in each Group)

BI = 2 x (Group 1) + (Group 2)
Beck's Index Values

0 Stream grossly polluted
1-5 Stream moderately polluted
6-9 Stream clean, but monotypic habitat
10+ Stream clean



Bar line indicate relative size

Stream Invertebrates

Group One Taxa

Pollution sensitive organisms found in good quality water.

1 **Stonefly Order Plecoptera.** 1/2" to 1 1/2", 6 legs with hooked antenna, 2 hair-line tails. Smooth (no gills) on lower half of body (see arrow).

2 **Caddisfly: Order Trichoptera.** Up to 1", 6 hooked legs on upper third of body, 2 hooks at back end. May be in a stick, rock, or leaf case with its head sticking out. May have fluffy gill tufts on underside.

3 **Water Penny: Order Coleoptera.** 1/4", flat saucer-shaped body with a raised bump on one side and 6 tiny legs and fluffy gills on the other side. Immature beetle.

4 **Riffle Beetle: Order Coleoptera.** 1/4", oval body covered with tiny hairs, 6 legs, antennae. Walks slowly underwater. Does not swim on surface.

5 **Grilled Snail: Class Gastropoda.** Shell opening covered by thin plate called operculum. When opening is facing you, shell usually opens on right.

6 **Mayfly: Order Ephemeroptera.** 1/4" to 1", brown, moving, plate-like or feathery gills on the sides of lower body (see below). 6 large hooked legs, antennae, 2 or 3 long hair-like tails. Tails may be webbed together.

7 **Dobsonfly (hellgrammite): Family Corydalidae.** 3/4" to 4", dark-colored, 6 legs, large pinching jaws, eight pairs feelers on lower half of body with paired cotton-like gill tufts along underside, short antennae, 2 tails, and 2 pairs of hooks at back end.

Group Two Taxa

Somewhat pollution tolerant organisms can be in good or fair quality water.

8 **Crayfish: Order Decapoda.** Up to 6", 1 large claws, 8 legs, resembles small lobster.

9 **Sowbug: Order Isopoda.** 1/4" to 3/4", gray oblong body wider than it is high, more than 6 legs, long antennae.

Source: Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, MD 20878-2983 (800) BUG-IWLA

(NWCC Technical Note 99-1, Stream Visual Assessment Protocol, December 1998) 19